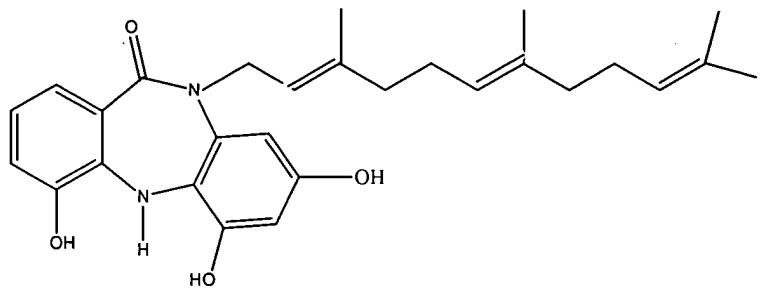
## CLAIMS

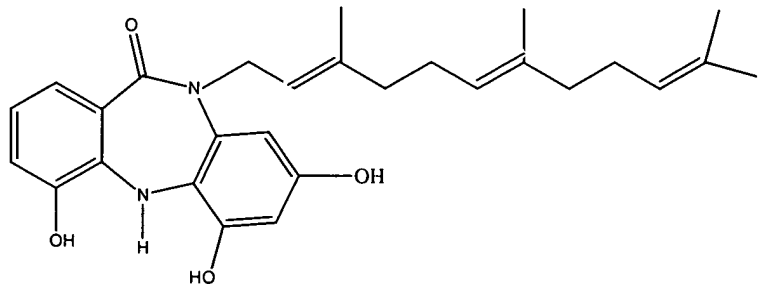
We claim:

1. A compound of the formula



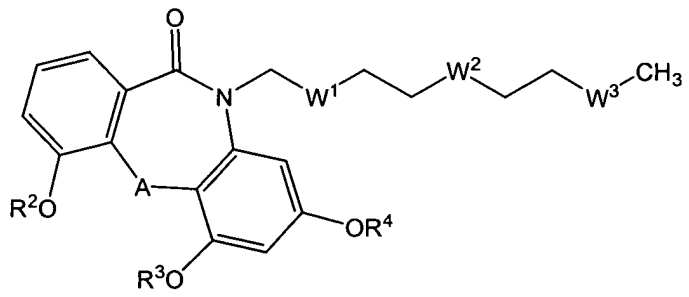
or a pharmaceutically acceptable salt thereof.

2. A pharmaceutical composition comprising a compound of the formula



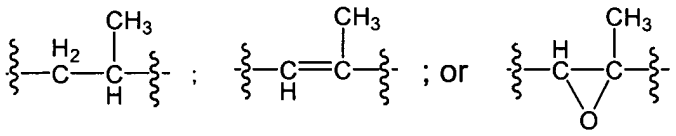
or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable carrier.

3. A compound of Formula I:



wherein,

$W^1$, $W^2$ and $W^3$ is each independently selected from



A is selected from –NH--, $-NCH_2R^1$, $-NC(O)R^1$;

$R^1$ is selected from $C_{1-6}$ alkyl, $C_{2-6}$ alkene, aryl or heteroaryl;

$R^2$, $R^3$, and $R^4$ is each independently selected from H, $R^5$, $-C(O)R^6$

$R^5$ is each independently selected from $C_{1-6}$ alkyl, $C_{2-7}$ alkalene, aryl or heteroaryl;

$R^6$ is each independently selected from H, $C_{1-6}$ alkyl, $C_{2-7}$ alkalene, aryl or heteroaryl; or a pharmaceutically acceptable salt thereof.

4. The compound of claim 3, or a pharmaceutically acceptable salt thereof, wherein A is NH.

5. The compound of claim 3, or a pharmaceutically acceptable salt thereof, wherein A is $-NCH_2R^1$.

6. The compound of claim 3, or a pharmaceutically acceptable salt thereof, wherein A is $-NC(O)R^1$.

7. The compound of claim 3, or a pharmaceutically acceptable salt thereof, wherein $R^2$ is H.

8. The compound of claim 3, or a pharmaceutically acceptable salt thereof, wherein $R^3$ is H.

9. The compound of claim 3, or a pharmaceutically acceptable salt thereof, wherein $R^4$ is H.

10. The compound of claim 3, or a pharmaceutically acceptable salt thereof, wherein $R^2$, $R^3$ and $R^4$ are each H.

11. The compound of claim 3, or a pharmaceutically acceptable salt thereof, wherein $R^2$, $R^3$ and $R^4$ are each H, and $W^1$ is –CH =CH-.

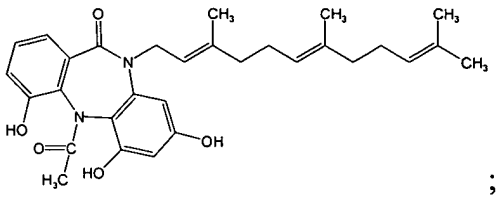
12. The compound of claim 3, or a pharmaceutically acceptable salt thereof, wherein $R^2$, $R^3$ and $R^4$ are each H, and $W^2$ is –CH =CH-.

13. The compound of claim 3, or a pharmaceutically acceptable salt thereof, wherein $R^2$, $R^3$ and $R^4$ are each H, and $W^3$ is –CH =CH-.

14. The compound of claim 3, or a pharmaceutically acceptable salt thereof, wherein A is NH and $R^2$, $R^3$ and $R^4$ are each H.

15. The compound of claim 3, or a pharmaceutically acceptable salt thereof, wherein A is NH, each of $W^1$, $W^2$, and $W^3$ is –CH =CH-.

16. A compound selected from the group consisting of: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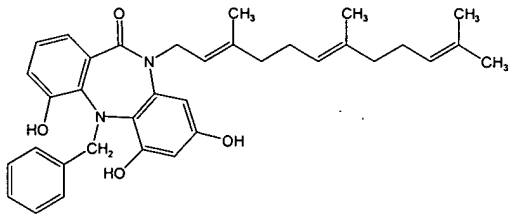

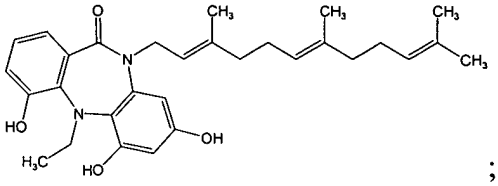
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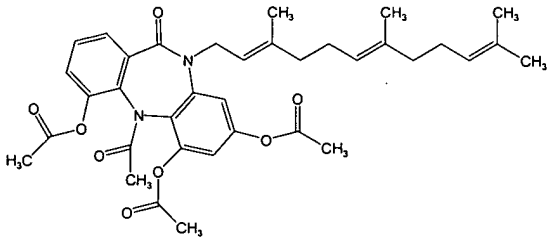

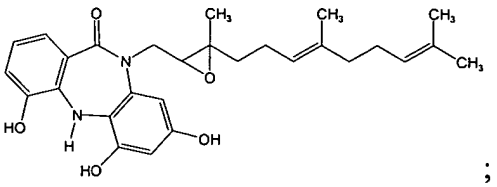
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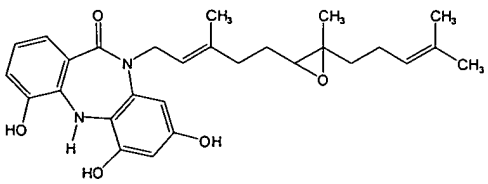

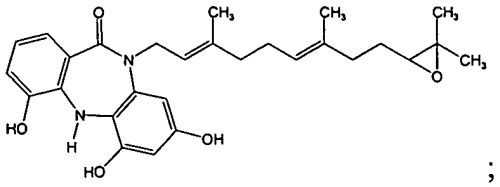
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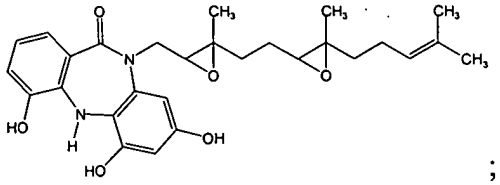
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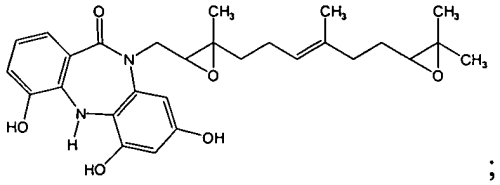
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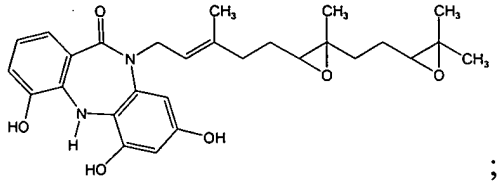
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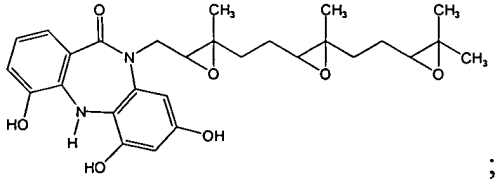
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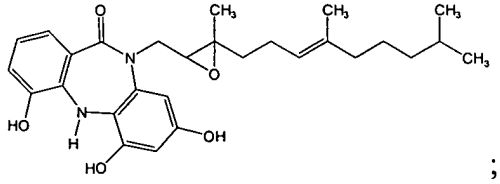
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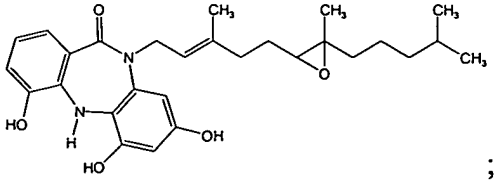
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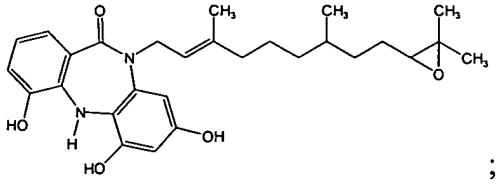
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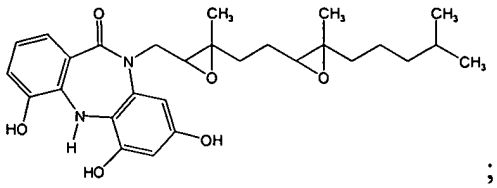
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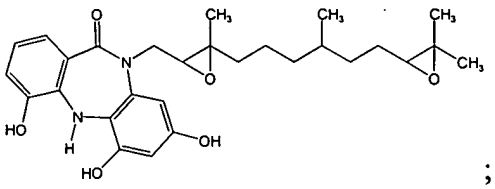
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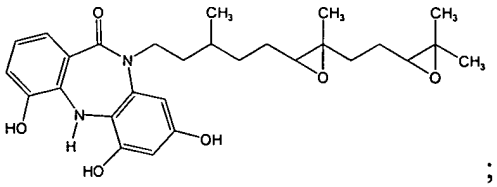
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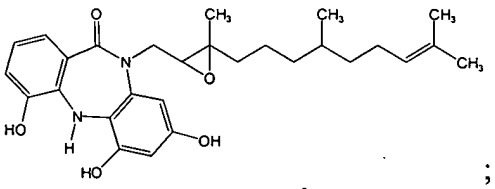
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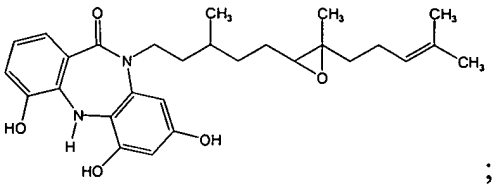
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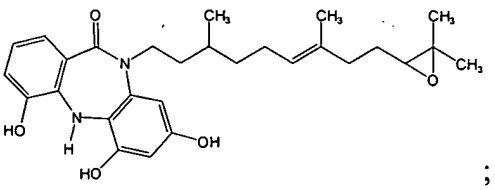
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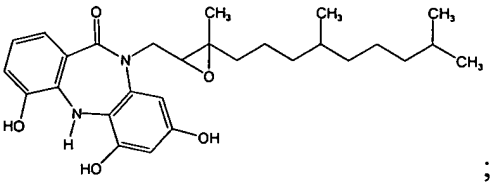
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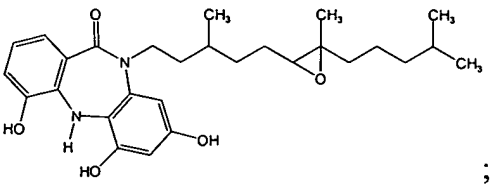
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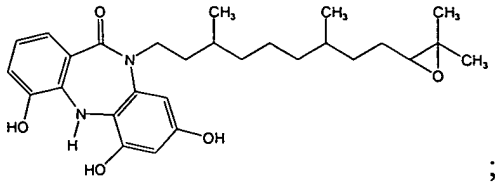
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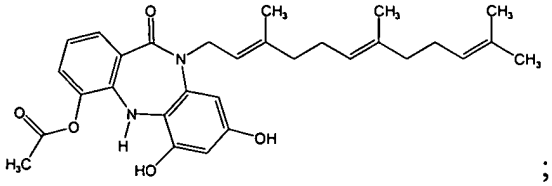
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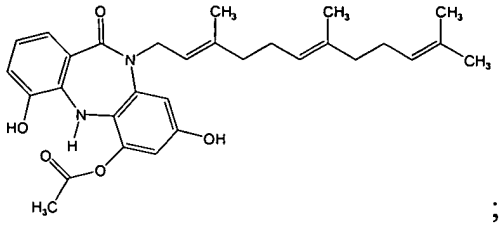
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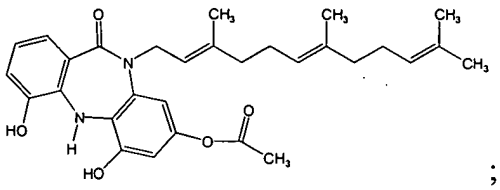
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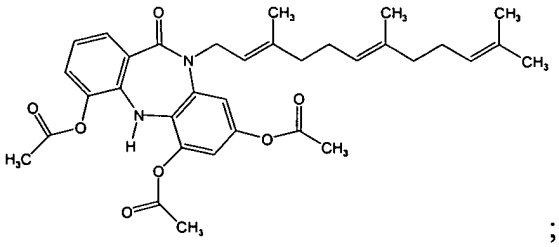
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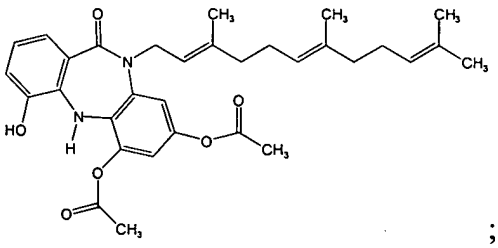
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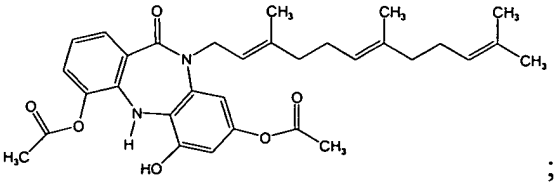
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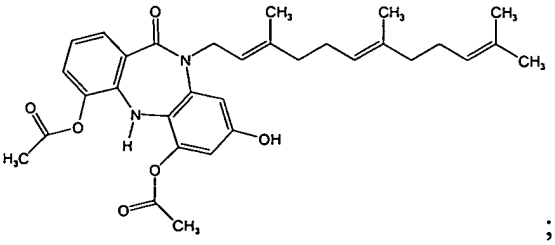
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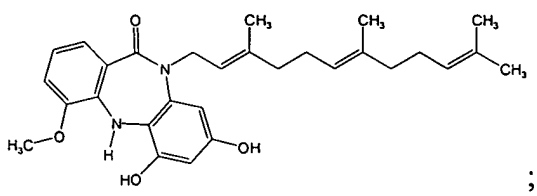
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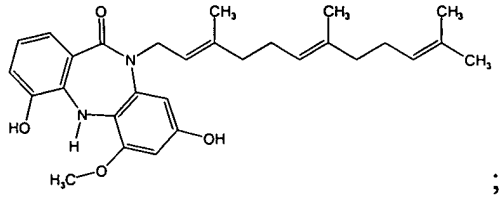
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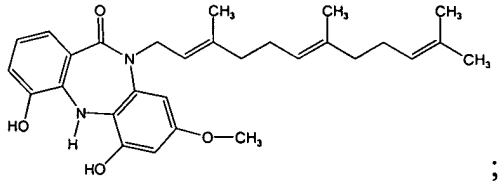
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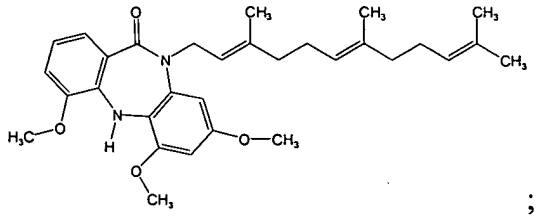
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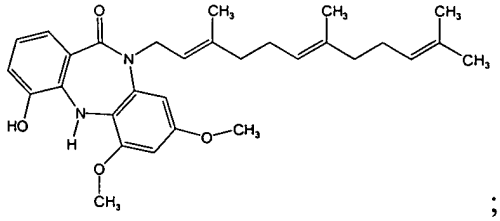
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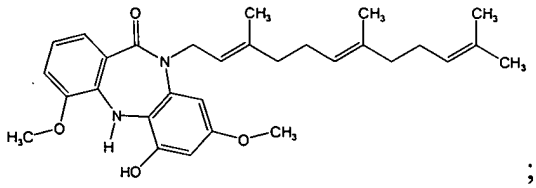
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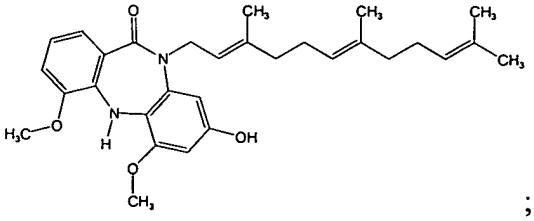
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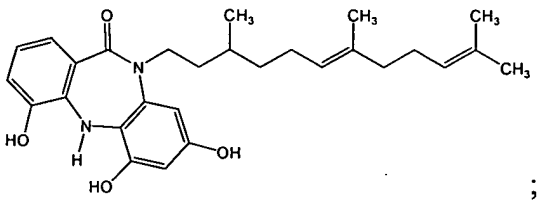
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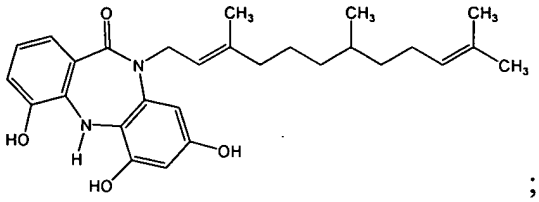
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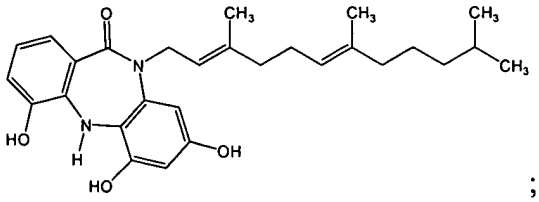
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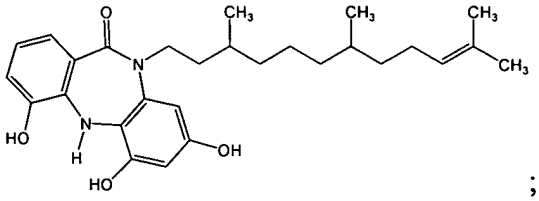
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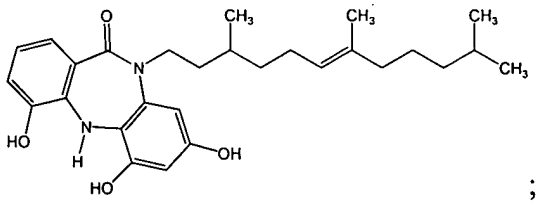
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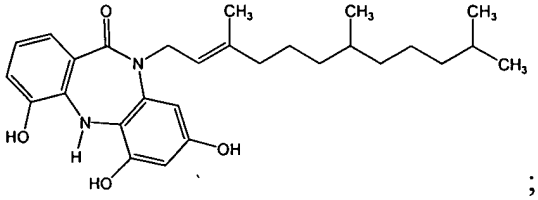
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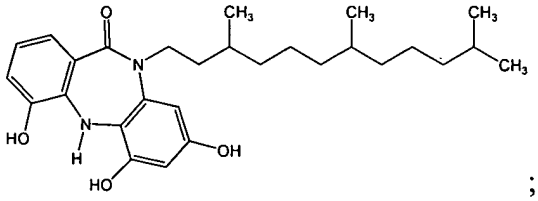
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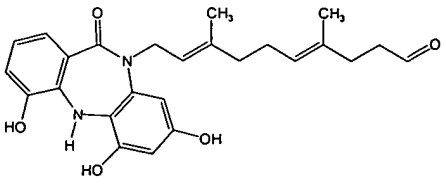
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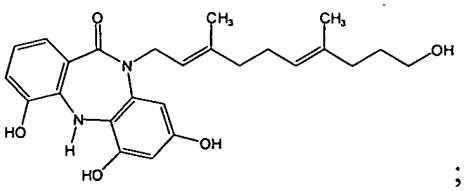
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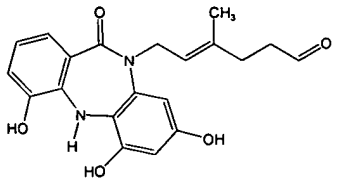
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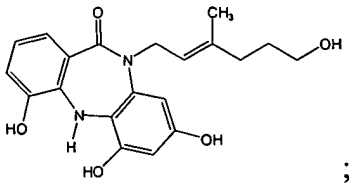
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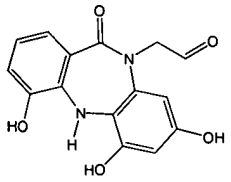
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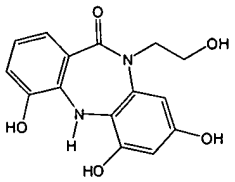
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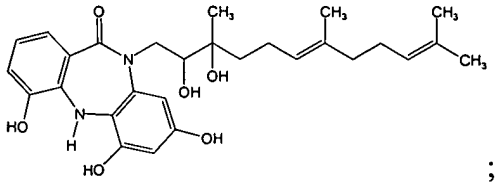
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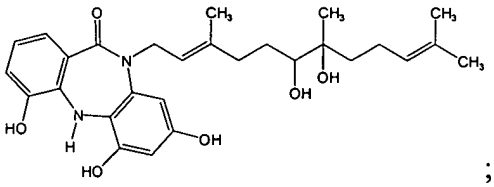
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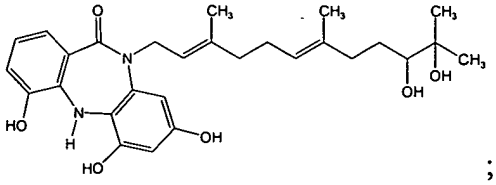
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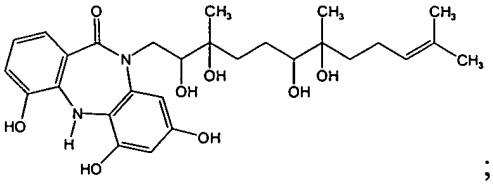
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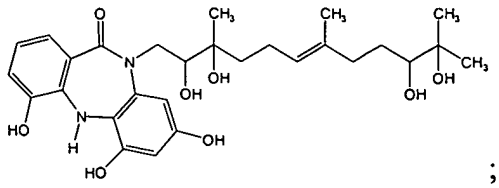
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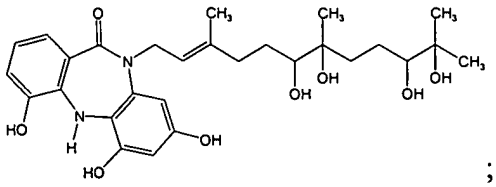
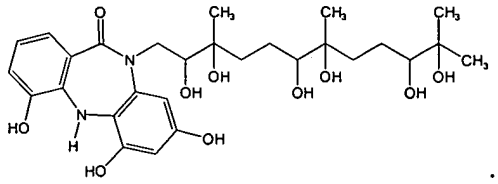

; and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17. A pharmaceutical composition comprising the compound of claim 3 or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable carrier.

18. A farnesyl dibenzodiazepinone obtained by a method comprising

a) cultivating Micromonospora sp. strain [S01]046, wherein said cultivation is performed under aerobic conditions in a nutrient medium comprising at least one source of carbon atoms and at least one source of nitrogen atoms; and

b) isolating a farnesyl dibenzodiazepinone from the bacteria cultivated in step (a).

19. The farnesyl dibenzodiazepinone of claim 18 that generates NMR spectra essentially as shown in Figure 3.

20. A process for making the compound of claim 1, comprising cultivation of Micromonospora sp. strain 046-ECO11, in a nutrient medium comprising at least one source of carbon atoms and at least one source of nitrogen atoms, and isolation and purification of said compound.

21. A process for making the compound of claim 1, comprising cultivation of Micromonospora sp. strain [S01]046 in a nutrient medium comprising at least one source of carbon atoms and at least one source of nitrogen atoms, and isolation and purification of said compound.

22. The process of claim 21, wherein said cultivation occurs under aerobic conditions.

23. The process of claim 21, wherein said carbon atom and said nitrogen atom sources are chosen from the components shown in Table 16.

24. The process of claim 21, wherein said cultivation is carried out at a temperature ranging from 18°C to 40°C.

25. The process of claim 21, wherein said cultivation is carried out at a pH ranging from 6 to 9.

26. Micromonospora sp. having IDAC Accession No. 231203-01 or IDAC Accession No. 070303-01.

27. A method of inhibiting the growth of a cancer cell, comprising contacting said cancer cell with a compound of claim 3, such that growth of said cancer cell is inhibited.

28. A method of inhibiting the growth of a cancer cell, comprising contacting said cancer cell with a compound of claim 1, such that growth of said cancer cell is inhibited.

29. A method of inhibiting the growth of a cancer cell in a mammal, comprising administering the compound of claim 3 to a mammal comprising a cancer cell, such that growth of said cancer cell is inhibited in said mammal.

30. A method of inhibiting the growth of a cancer cell in a mammal, comprising administering the compound of claim 1 to a mammal comprising a cancer cell, such that

growth of said cancer cell is inhibited in said mammal.

31. A method of treating a pre-cancerous or cancerous condition in a mammal, comprising the step of administering to said mammal a therapeutically effective amount of the compound of claim 3, such that a pre-cancerous or cancerous condition is treated.

32. A method of treating a pre-cancerous or cancerous condition in a mammal, comprising the step of administering to said mammal a therapeutically effective amount of the compound of claim 1, such that a pre-cancerous or cancerous condition is treated.

33. A method of treating a bacterial infection in a mammal, comprising administering a therapeutically effective amount of the compound of claim 3 to said mammal having a bacterial infection, such that said bacterial infection is treated.

34. A method of treating a bacterial infection in a mammal, comprising administering a therapeutically effective amount of the compound of claim 1 to said mammal having a bacterial infection, such that said bacterial infection is treated.

35. A method of reducing inflammation in a mammal, comprising administering to a mammal having inflammation a therapeutically effective amount of the compound of claim 3, such that said inflammation is reduced.

36. A method of reducing inflammation in a mammal, comprising administering to a mammal having inflammation a therapeutically effective amount of the compound of claim 1, such that said inflammation is reduced.

37. An isolated polynucleotide comprising SEQ ID NOs. 1, 64 and 73, wherein said polynucleotide encodes a polypeptide that participates in a biosynthetic pathway for a farnesyl dibenzodiazepinone.

38. An isolated nucleic acid for production of a farnesyl dibenzodiazepine, said nucleic acid selected from the group consisting of:

a) SEQ ID NOS: 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 66, 68, 70, 72, 75, 77, 79, 81, 83, 85, 87 and 89;

b) a nucleic acid encoding a polypeptide of SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86 and 88;

c) a nucleic acid that is at least 75% identical to a nucleic acid of a) or b), and which encodes a polypeptide having the same biological function as a polypeptide of SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86 or 88 respectively;

d) a nucleic acid that is complementary to a nucleic acid of a), b) or c).

39. A nucleic acid sequence encoding a polypeptide selected from the group consisting of:

a) SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86 and 88;

b) polypeptides that are at least 85% identical to SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86 or 88, and having the same biological function as a polypeptide of SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86 and 88.

40. A nucleic acid sequence of claim 38 or 39 encoding a polypeptide selected from the group consisting of:

a) SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80 and 82; and

b) polypeptides that are at least 85% identical to SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80 and 82 and having the same biological function as a polypeptide of SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34,

36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80 or 82.

41. A nucleic acid sequence of claim 38 or 39 comprising a sequence selected from the group consisting of:

a) SEQ ID NOS: 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 66, 68, 70, 72, 75, 77, 79, 81, 83, 85, 87 and 89; and

b) a sequence that is at least 85% identical to SEQ ID NOS: 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 66, 68, 70, 72, 75, 77, 79, 81, 83, 85, 87 or 89, and encodes a polypeptide having the same biological function as a polypeptide of SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86 and 88.

42. A nucleic acid sequence of claim 38 or 39 comprising a sequence selected from the group consisting of:

a) SEQ ID NOS: 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 66, 68, 70, 72, 75, 77, 79, 81, 83, 85, 87 and 89; and

b) a sequence that is at least 90% identical to SEQ ID NOS: 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 66, 68, 70, 72, 75, 77, 79, 81, 83, 85, 87 and 89.

43. A nucleic acid sequence of claim 38 or 39 comprising a sequence selected from the group consisting of:

a) SEQ ID NOS: 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 66, 68, 70, 72, 75, 77, 79, 81, 83, 85, 87 and 89; and

b) a sequence that is at least 98% identical to a SEQ ID NOS: 3, 5, 7, 9, 11, 13, 15, 17, 19,

21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 66, 68, 70, 72, 75, 77, 79, 81, 83, 85, 87 or 89.

44. A nucleic acid sequence encoding at least two of the nucleic acid sequences of claim 38 or 39.

45. A nucleic acid sequence encoding at least three of the nucleic acid sequences of claim 38 or 39.

46. A nucleic acid sequence encoding at least five of the nucleic acids of claim 38 or 39.

47. An expression vector comprising a nucleic acid of claim 38 or 39.

48. An isolated host cell transformed with an expression vector of claim 47

49. A bacterial host cell transformed with an expression vector of claim 47.

50. The host cell of claim 48 or 49 wherein said host cell is selected from species of the genera *Pseudomonas* and *Streptomyces*.

51. The host cell of claim 48 or 49 wherein the host cell is *E. coli*.

52. An isolated polypeptide comprising the amino acid sequence selected from the group consisting of:

a) SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86 and 88; and

b) a polypeptide having at least 75% identity to a polypeptide of SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84 or 86, and having the same biological

function as the polypeptide of SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84 or 86 respectively.

53. An isolated polypeptide comprising the amino acid sequence selected from the group consisting of:

a) SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86, 88; and

b) polypeptide having at least 85% identity to a polypeptide of SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86 or 88, and having the same biological function as the polypeptide as SEQ ID NOS. 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 24, 26, 38, 40, 42, 44, 46, 48 or 50 respectively.

54. An isolated polypeptide comprising the amino acid sequence selected from the group consisting of:

a) SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86, 88; and

b) a polypeptide having at least 85% identity to a polypeptide of SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86 or 88, and having the same biological function as the polypeptide of SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86 or 88 respectively.

55. An isolated polypeptide comprising the amino acid sequence selected from the group consisting of:

a) SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41,

42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86 and 88; and

b) a polypeptide having at least 90% identity to a polypeptide of SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86 or 88.

56. An isolated polypeptide comprising the amino acid sequence selected from the group consisting of:

a) SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86 and 88;

b) a polypeptide having at least 95% identity to a polypeptide of SEQ ID NOS: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 41, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 65, 67, 69, 70, 71, 74, 76, 78, 80, 82, 84, 86 or 88.

57. A method of making a polypeptide having a sequence selected from the polypeptides of any one of claims 52 to 56 comprising introducing into a host cell *in vitro* a nucleic acid encoding said polypeptide, said nucleic acid being operably linked to a promoter.

58. A method of making a polypeptide having a sequence selected from the polypeptides of any one of claims 52 to 56 comprising introducing into an isolated host cell a nucleic acid encoding said polypeptide, said nucleic acid being operably linked to a promoter.

59. A method of making a polypeptide having a sequence selected from the polypeptides of any one of claims 52 to 56 comprising introducing into a bacterial host cell a nucleic acid encoding said polypeptide, said nucleic acid being operably linked to a promoter.

60. Cosmid 046KM deposited under IDAC accession no. 250203-06.

61. Cosmid 046KQ deposited under IDAC accession no. 250203-07.

62. The cosmid of claim 60 or 61, wherein said cosmid is inserted into a prokaryotic host for expressing a product.

63. The cosmid of claim 62, wherein said host is *E. coli*, *Streptomyces lividans*, *Streptomyces griseofuscus*, *Streptomyces ambofuchsus*, *Actinomycetes*, *Bacillus*, *Corynebacteria* or *Thermoactinomyces*.

64. A DNA which hybridizes under stringent hybridization conditions to the DNA of the cosmid of claim 60 or 61; and that encodes a biosynthetic pathway for the production of a farnesyl dibenzodiazepine.

65. A method for increasing the yields of a farnesyl dibenzodiazepine, said method comprising the steps of transforming a prokaryotic host with the cosmid of claim 60 or 61; and culturing the transformed prokaryotic host under conditions which result in the expression of farnesyl dibenzodiazepine.

66. The polypeptide of any one of claims 52 to 56, wherein said polypeptide participates in a biosynthetic pathway for a farnesyl dibenzodiazepinone.

67. An expression vector comprising one or more of the polynucleotides of claims 38 or 39.

68. A recombinant prokaryotic organism comprising an expression vector of claim 67.

69. The organism of claim 68, wherein said organism is an actinomycete.

70. The organism of claim 68 or 69, wherein said organism requires said expression vector to synthesize a farnesyl dibenzodiazepinone.

71. A method of synthesizing a farnesyl dibenzodiazepinone *de novo* in a prokaryote, comprising the steps of:

(a) providing a prokaryote that is incapable of synthesizing a farnesyl dibenzodiazepinone;

(b) transforming said prokaryote with an expression vector of claim 67; and

(c) culturing said prokaryote;

wherein said culturing results in the synthesis of said farnesyl dibenzodiazepinone in said prokaryote.

72. The method of claim 71, wherein said prokaryote is an actinomycete.

73. The method of claim 71, wherein said vector expresses a polypeptide of any one of claims 52 to 56.